

Amendment

Serial No.: 08/099,257

Filed: July 29, 1993

Title: VEHICLE DETECTOR WITH ENVIRONMENTAL ADAPTATION

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§112 First Paragraph

Paragraph 1 objected to the specification under 35 USC §112, first paragraph for failing to provide an enabling disclosure. Paragraph 2 rejected claims 1-13 under 35 USC §112, first paragraph for the same reasons set forth in the objection to the specification. Applicant respectfully traverses these rejections.

The Office Action says that there is no control circuitry, block diagrams and/or flowcharts provided in the specification and the drawings to explain the following issues:

- (1) how the vehicle calculates a time after the vehicle exits from the detection area at which the vehicle will not influence the period of the oscillator signal,
- (2) measuring the inductance in order to recognize an environmental factor or change unrelated to the inductive sensor,
- (3) measuring the inductance in order to identify changes not caused by vehicles, and therefore recognize that mechanical difficulties requiring maintenance has occurred, and
- (4) adjusting reference values to reflect slow changes caused by environmental factors.

Applicant respectfully submits that the specification and drawings are sufficient to enable one of ordinary skill in the art at the time the invention was made to make and use the invention.

Support for issue number (1) above can be found in the specification at page 7, line 27 through page 11, line 18. The time after vehicle exit is calculated by processor 20 (see page 10, lines 1-10, and Figure 1), and is explicitly recited in the specification to be based on the measured speed of the vehicle (page 10, lines 6-10). It is well known that the time in which an object travels a certain distance (here the distance at

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which the vehicle will have substantially no effect on the frequency of the oscillator signal) is related to the speed of the vehicle by the equation:

$$t = d/v$$

where t = time, d = distance and v = velocity or speed.

The way in which the speed of the vehicle is determined is explicitly described in the specification at page 8, line 4 through page 10, line 5.

Issue number (2) is discussed in the specification at page 11, line 19 through page 12, line 17. The processor 20 and dummy sensor used to accomplish the measurement (2) are both shown in Figure 1. Furthermore, page 10, lines 21-28 explicitly describe that the oscillator frequency is measured while connected to the dummy sensor and compared to previous measurements of the oscillator frequency while connected to the dummy sensor. Because the dummy sensor is not affected by vehicles, any change in the measured frequency while connected to the dummy sensor can be identified as due to environmental factor such as temperature and humidity (page 11, line 20 through page 12, line 11).

Issue number (3) is described in the specification at page 12, line 18 through page 14, line 3. The processor 20 (shown in Figure 1) determines the rate of change of the oscillator signal. If this rate of change equals or exceeds a certain threshold, the change is indicative of mechanical difficulties (page 13, lines 8-17).

Issue number (4) is described in the specification at page 14, line 4 through page 16, line 5. There it is described that all calculations are performed by processor 20 shown in Figure 1. Adjustment of the reference values by processor 20 is specifically described at page 15, line 18 through page 16, line 5.

The specification is therefore sufficient to meet the requirements of 35 USC §112, first paragraph. Applicant therefore respectfully requests that the objection to

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the specification and to claims 1-13, as failing to provide an enabling disclosure be withdrawn.

§112 Second Paragraph Rejections

Paragraph 3 rejected claims 1-10 and 13 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim that which the applicant regards as the invention.

Claims 1, 2, 5-10 and 13 have been amended as suggested by the Office to address the issues raised in the Office Action. Applicant submits that the claims as amended are sufficiently definite to meet the requirements of 35 USC §112, second paragraph, and therefore respectfully requests that the rejection be withdrawn.

Obvious-type Double Patenting Rejection

Paragraph 4 of the Office Action rejected claims 1-13 under the judicially created doctrine of obvious-type double patenting as being unpatentable over claims 1-17 of U.S. Patent Number 5,728,555 (hereinafter Hoekman '555). Applicant respectfully traverses this rejection.

Claims 1-13 as currently presented are patentably distinct over claims 1-17 of Hoekman '555. The Office Action acknowledges that Hoekman '555 does not explicitly recite all of the steps of the presently claimed invention. However, the Office Action says that because Hoekman '555 has a processor and other sensors, the present claims are not patentably distinct because "programming of a processor to perform various functions does not constitute an inventive step but an obvious design choice".

The presently claimed methods are not an "obvious design choice" over the methods claimed in 1-17 of Hoekman '555. Claims 1-17 of Hoekman '555 are entirely

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unconcerned with the problems addressed by the methods recited in claims 1-13 of the present application.

The present application solves the problems caused by changing environmental and mechanical conditions that can affect the inductance of a vehicle detector's inductive sensor. These factors, if unaccounted for, can result in failure to detect vehicles when they are present, or in false detection of vehicles when in fact no vehicle is present.

The presently claimed methods adapt a vehicle detector to these changing environmental or mechanical conditions, thus eliminating the false detect or failure to detect problems described above. For example, claim 1 of the present application recites the steps of "calculating a time after the vehicle exits from the detection area at which the vehicle will not influence the period of the oscillator signal", "producing a sample measurement value at the calculated time after vehicle exit", "comparing the reference value to a sample measurement value", and "adjusting the reference value based upon the comparison".

In contrast, method claims 1-17 of Hoekman '555 are in no way concerned with these problems or with any way to solve them. Hoekman '555 is concerned only with methods for detecting vehicles (e.g., claim 1), methods for determining vehicle speed (e.g., claims 2,8-10, 13-17), detection of multiple vehicles (e.g., claims 3, 11, 14) and determination of vehicle length (e.g., claims 4 and 12). None of claims 1-17 of Hoekman '555 recite or suggest the detector adaptation methods recited in present claims 1-13.

The claims of Hoekman '555 do not recite, nor do they suggest, the present claims in which a vehicle detector adapts to changing environmental and mechanical conditions. Because Hoekman '555 does not explicitly claim, nor do the claims suggest the methods recited in claims 1-13, claims 1-13 are patentably distinct over

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claims 1-17 of Hoekman '555. Applicant therefore respectfully requests that the rejection of claims 1-13 under the judicially created doctrine of obvious-type double patenting over claims 1-17 of Hoekman '555 be withdrawn.

CONCLUSION

In light of the above amendments and remarks, Applicant respectfully submits that the claims as amended are in condition for allowance. Applicant therefore respectfully requests a favorable Action on the merits.

Please direct any inquiries to the undersigned attorney at (612) 736-7176.

Respectfully submitted,

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